Federal Communications Commission
Washington, DC 20554

March 02, 2017

ET Docket No. 14-165
Part 15 of the Commission's Rules
for Unlicensed Operations in the Television Bands

Reconsideration for higher antenna elevations;
Above Ground Level (AGL)

To Whom It May Concern,

Q-Wireless, LLC (QWL) is a Wireless Internet Service Provider (WISP) that provides "Fixed" Internet Services to Rural, Underserved and Less Congested Areas in central Kentucky. We provide services using non-licensed equipment primarily in the 900MHz ISM band due to challenging terrain and dense foliage that make only Non-Line-Of-Sight (NLOS) frequencies feasible.

My comments are regarding White Space Devices ("WSD") and address the need for AGL installations higher than 30 meters from a "practical" perspective. That is, WISPs need a practical means to install and operate such equipment.

Water Tanks: Water tanks are fantastic sites for WISPs to deploy WSD. Mostly, we install WSD on the railing around the belly of the water tank. This also provides great front-to-back antenna shielding. However, only about 60% of the water tanks we use have railings less than 30 meters AGL. It becomes expensive, impractical and 'unsightly' to tank owners for us to deploy antennas offset below the railing. After reviewing water tanks in our geographical area, the highest railing is less than 64 meters.

Tree Line: I have learned from experience that no matter the frequency, RF needs a "running start". Practically, this means that if the Fresnel Zone encounters any horizontal obstruction, such as foliage, within the first 60 meters from the Base Station (BST) antennas, then propagation will be greatly crippled. At an AGL of 30 meters, this is problematic as near-field trees are often 20 – 40 meters in height and possibly also grow on a higher ridge than the water tank. After reviewing water tanks in our geographical area, the minimum height to clear most near field trees is less than 64 meters.

Recommendation: I request the Reconsideration allow installations up to 64 meters AGL. This would provide a practical aspect to deployments which does not exist at the current 30 meter limit.

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Considerations: Although it does not seem necessary since this increase in AGL would still require that antennas be deployed lower than HAAT; we would be content to accept the following trade-offs:

(a) As the AGL increases from 30 meters to 64 meters, the directional-antenna down tilt could be increase by 1 degree for every 8.5 meters, limiting any potential effect upon a TV contour. For example, we generally apply about 2 degrees of tilt at 30 meters, so for antennas deployed at 64 meters, we would tilt at 6 degrees.

(b) Alternately, as the AGL increases from 30 meters to 64 meters, the EIRP could be reduced by 1 dB for every 8.5 meters limiting any potential effect upon a TV contour. For example, i) operation at the 36dBm level, the allowed EIRP would be reduced to 32dBm at 64 meters AGL and ii) operation at the 40dBm level in less congested areas, the allowed EIRP would be reduced to 36dBm at 64 meters.

Antennas – side comment: Although my comments are not about antennas, I do want to add that it will be very difficult to deploy White Space directional-antennas greater than 10dBi due to physical size and expense. Presently, 10dBi antennas are very large and 13dBi antenna size is prohibitive on communication towers for the rent and / or wind loading is also excessive. On water tanks, 13dBi antennas could be deployed but the current cost of the antenna is outside my budget. And corresponding 13dBi CPE antennas are also problematic due to size acceptable to most home owners.

Conclusion: I don't envision fixed wireless as an end-all for the rural subscriber; we believe a multitude of solutions are necessary. But fixed wireless has its place and should be seen by the FCC as more than just an afterthought, for WISPs are very efficient and dynamic entrepreneurs. It is truly exciting to think the rural coverage WISPs could provide if given more TVWS spectrum with more allowed EIRP, (and channel bonding and / or aggregation).

Give WISPs spectrum and freedom and you will see results.

Regards,

Phil Lambert
as General Manager
Q-Wireless, LLC

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